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Screws, Screw Drivers, &c.—J. Wetter, J. Hastie, A. M. Clark (com.).

Sewing and Embroidering.—M. H. Pearson, S. Redhouse, F. H. F. Engel (com.), T. Fletcher, D. McGlashan, W. R. Lake (com.), J. H. Johnson (com.).

Shears, &c.—S. Ault, P. F. Mantelet, F. Wich (com), W. E. Gedge (com.), W. R. Lake (com.).

Ship and Boatbuilding.—H. Smith, J. G. Hartley, B. J. M. Mills (com.), J. Wetter, H. Hornby, G. Wilson, W. Henman, H. Whitehead and J. Snow, H. E. Newton (com.), H. C. Bagot, P. M. Justice (com.).

Ships' Cargoes (Loading, &c.)—H. F. Brion, W. S. Brice, W. Lowrie.

Ships' Logs.—J. R. Neile.

Ships (Raising).—H. F. Brion, D. W. Sargeant.

Ships' Rigging, &c.—W. Bodill, A. Rickaby.

Shot, Shell, Bullets, Cartridges, Percussion Caps, &c.—W. Hope and R. Ripley.

Signals, Alarms, Communicating Apparatus, Conveying Sounds.—E. A. Sullivan, H. Johnson, J. Y. Lloyd, G. C. Pulford, J. Wetter (com.), St. J. V. Day (com.), H. J. Haddan (com.), G. W. von Nawrocki (com.), J. Miller and J. Smith, F. W. Gisborne, H. J. Haddan (com.), J. A. Lund.

Syphons.—W. E. Hopkins.

Spinning and Preparing for Spinning.—T. G. S. Garnett, J. R. Day, R. Southworth, J. Law and W. and S. Kitchin, E. Hird, D. H. Brandon (com.), M. Bauer (com.), T. Threlfall, J. T. Taylor and J. Trinker, J. H. Johnson (com.), W. A. Barlow (com.), H. J. Haddan (com.), H. Southwell.

Springs.—M. Stobbs, G. D. Peters.

Stamps (Revenue), &c.—G. W. von Nawrocki (com.).

Stays.—W. R. Lake (com.).

Steam and other Boilers, Cleaning and Preventing Incrustation of Boilers, Water Feeding Apparatus for Boilers.—S. Borland, G. E. Vaughan (com.), G. and J. Weir, J. Nicholson, J. Graddon, S. Fox and D. Grey, G. H. Babcock, S. Wilcox and N. W. Pratt, R. S. Candlish and W. J. Norris, J. D. Churchill, H. J. Harman, H. A. Bonneville (com.), G. W. von Nawrocki (com.), R. Stevenson, C. Pieper (com.), S. Perkins, L. Mills, R. S. Candlish and W. J. Norris, A. C. Henderson (com.), D. J. Morgan.

Steam Engines (Stationary, Locomotive, and Marine).—B. J. B. Mills (com.), T. Green and J. Thyne, W. S. and W. O. Smith, R. S. Candlish and W. J. Norris, W. R. Lake (com.), J. Richardson, E. Edwards (com.), G. Low and E. J. Davies, R. S. Candlish and W. J. Norris.

Steering Ships, &c.—C. Glover, C. de Bron, C. R. Simey.

Telegraphs; Telegraph Printing Apparatus.—J. H. Johnson (com.), W. R. Lake (com.), C. Kesseler (com.), J. Imray (com.), J. A. Lund.

Testing Liquids, &c.—L. Perrier.

Tilling and Cultivating, &c.—J. Kirkpatrick, T. R. H. Fisken, J. and C. T. Robinson, R. Sellar.

Tobacco and Snuff, Cigars, Cigar-Holders, Pipe and Cigar-lighters, Smoking Pipes, Tobacco Pouches, &c.—B. J. B. Mills (com.), A. Percy, J. McDonald, J. Thompson.

Tramways and Tramway Carriages, Tramway, Locomotives.—W. Brown, H. Hughes.

Traps for Drains, &c.—J. W. Lamb, C. W. Burge.

Trimmings, &c.—W. E. Jefferson and E. Lee, F. E. A. Busche.

Umbrellas, Parasols, &c.—W. T. Parr, S. E. Carlisle (com.), W. L. Wise (com.).

Upholstery.—E. Hooke, W. Bodill, R. B. Evered, W. R. Lake (com.).

Valves, Taps, Stop Cocks, Plugs; Regulating the Flow and Pressure of Fluids.—J. W. Midgley, J. D. Churchill, H. J. Harman, E. Edwards (com.), G. Fletcher (com.), G. Low and E. J. Davies, J. Aird, J. W. Lamb, P. D. Reynolds, W. R. Maguire, A. Cole, D. J. Fleetwood, P. Keppie.

Velocipedes, Bicycles, &c.—M. H. Gerring and R. E. Rumsey, T. Humber, T. R. Marriott and F. Cooper, J. H. Walsh, H. J. Lawson, J. Symes, J. Liedman and C. Beyer, H. Homan, J. Turner, J. Goodman, H. Whitehead and J. Snow.

Ventilation: Supplying and Purifying Air for Buildings, Mines, Ships, Carriages, &c.—O. Sheppy, A. M. Clark (com.), M. Stobbs, B. Morton, W. Wilson, W. R. Lake (com.).

Washing, Cleansing, and Wringing Fabrics, Yarns, and Materials.—W. L. Wise (com.), E. Taylor, J. Hawthorn, W. E. Partridge.

Water-Closets, &c.—A. Cole, P. Keppie.

Watering, &c.—J. Chidley, J. Hayes.

Weaving, Braiding, Plaiting, Preparing for Weaving.—D. Marcom, C. F. and E. Burslem, J. Stansfield, A. Hitchon, W. Glover, J. Holding, H. Tetlow, J. and J. Lees and H. Travis, G. D. Sykes.

Wood and Veneer.—F. H. F. Engel (com.).

**** *The above List is prepared from the Patent Records by Mr. T. Morgan, Secretary of the Inventors' Patentright Association, Limited.*

A GLYCERINE BAROMETER.

A glycerine barometer has been suggested by Mr. James B. Jordan, and is being tested at Kew. The cistern is a cylindrical vessel of copper lined with tin, five inches deep and ten inches in diameter, fitted with a screwed cover, the air having access through a small hole in the cup attached to the cover, which has a recess holding cotton wool for filtering out the dust. The main tube, twenty-seven feet long, is connected with the cistern by attachment (with a soldered joint) to a projecting piece of tube which enters the cistern through the bottom, and is fitted at its opening with a screwed plug. The tube is an ordinary piece of metal gas pipe five-eighths inch in diameter, furnished at the top with a gun-metal socket, into which is cemented a glass tube four feet long, with an inside diameter of one inch, terminating in an open cup, and fitted with an India-rubber stopper.

The fluctuations of the level of the column of glycerine are observed and read off on brass scales placed on either side of the tube, and fitted with indices and verniers moved by mill heads at the bottom of the scales. One of these scales gives the length of the column of glycerine, the other the corresponding length of a column of mercury. A variation of a tenth of an inch in a mercurial column is shown by a change of more than an inch in the glycerine column, and the latter is therefore expected to show minute variations which are imperceptible in the former. Glycerine absorbs moisture freely when exposed to the air, but this is prevented in the new barometer by covering the exposed surface in the cistern with a layer of heavy petroleum oil specially prepared.

A PROBLEM OF THE FUTURE.

One of the greatest difficulties brewers will have to contend with when the use of unmalted grain is allowed, will be to sustain the vitality of their yeast. By germination some of the albumenoid constituents are rendered soluble, and therefore worts made with unmalted grain will be deficient in albumenoids compared with those made with malt alone. As some kinds of grain, wheat for example, are richer in albumenoids than others, it will be the object of the scientific brewer to so arrange his grists that the resulting worts contain a proper proportion of albumenoid constituents, otherwise his yeast will gradually become weak and exhausted. This will be one of the many and difficult problems which will arise from the proposed new state of things.—*Brewers' Guardian.*

Correspondence.

EXPLOSIONS IN COAL MINES.

TO THE EDITOR.

Sir,—Would you kindly admit a suggestion from a great dunce in science, though the suggestion may be a very impracticable one? When gas is generated in retorts is it not admitted into large reservoirs, and then through pipes laid on to wherever required? Would it be possible in coal mines where gas is generated without retorts to find means "in the pits" to receive that fatal gas into reservoirs, or receivers, &c., and then through pipes or tunnels laid on "up the shaft" to bring it into large reservoirs near the pit's mouth? I am not thinking about what the gas might do (I am told it is good for nothing as a wrong sort), but what could be done to save explosions in the pits, and whether "in the pits" underground, instead of above ground, something could not be managed. If my idea be absurd what a blessing science might render if a practicable scheme could be thought of to save our poor colliers.—I am, sir, yours, &c.

H. B.

Reviews.

SANITARY ENGINEERING.

"Sanitary Engineering, with Special Reference to the Sanitation of London Houses." By Messrs. INNES and BURTON, Consulting Engineers, 7, John-street, Adelphi, London, W.C. London: Printed by W. Trounce, 10, Gough-square, Fleet-street.

THE title of this pamphlet refers to one of the most important matters of the day, as everyone will doubtless admit without question. Those who are called upon to have recourse to the services of the sanitary engineer will doubtless find hints and suggestions of value; though truth compels us to state that the work is evidently a professional prospectus.

HYDRO-INCUBATION.

"Hydro-Incubation, in Theory and Practice, a Guide to Commercial Poultry Farming. By THOMAS CHRISTY, F.L.S. Sixth Edition. London: Christy & Co., 155, Fenchurch-street, E.C., 1880.

ARTIFICIAL hatching of poultry cannot be said to be a new idea, for not only has it been known and practised with success from ancient days in Egypt, but it has been adopted in this country for some time past. But though not now to be classed as a novelty, yet it is so far modern that the practical elucidation of its nature and character cannot fail to be of interest, especially when such an expert as Mr. Christy is the elucidator, and we give him credit for saying no more than the truth when he states that the continued call for further information on Hydro-Incubation constrains him to put forth a new edition of his hints on this and kindred subjects, though, as he remarks, to use his own words, when I first called attention to the matter, few were disposed to look upon it in a practical way, rather regarding incubators as ingenious toys.

Year by year, however, its real utility has more firmly established itself; the obstinate adherents of unassisted Nature see themselves beaten in the race of commercial success by more ingenious and progressive minds; and no voice is heard in opposition, save that of a few ancient theorists who cannot afford to admit their error, and who instead act the part of one of those troublesome hens—for whom they are special pleaders—which cannot be made to sit, but disturb everything by their useless agitations and unproductive clucks.

The time has now come when farming must be carried on in a more severely commercial and scientific spirit. Commissions on agriculture will do little, so long as farming is conducted in the happy-go-lucky way which has prevailed on small and medium-sized farms. In these trying days the only men who can maintain their position are the proprietors of very large farms, whose capital allows them to procure every means of diminishing labour and stimulating productiveness. But it would be a matter for regret if there were nothing but great farms. The smaller farmers are a very valuable class of the community. But it is certain that they must perish unless they extract from their farm everything it is legitimately capable of. Who can see the irregular hours of the labourer, the lounging work, the choked dishes, the abounding weeds, together with the infrequent supervision of the farmer, who sometimes knows more of the next meet or coursing party than he does of his stock-yard, without discovering one great cause of agricultual depression? If medium-sized farms are to continue, a new energy must be thrown into them. Farmers must give the same undivided attention to their business which is given by men in every other profession. They must give that energetic labour which was given by the old-fashioned farmer, together with that scientific attention which has only lately become possible, owing to the diffusion of knowledge by the weekly periodicals on each subject. Who would grudge a *Live Stock Journal*, when it can be delivered to your own door for 3½d.? The proprietors secure the highest talent, and anyone in doubt on a subject can, by writing to the editor, get the best opinion as to how he should act in regard to any stock on his farm. In the north of England the services of Mr. E. Brown, of Newcastle, were secured by several gentlemen connected with "The Fancy," who could not find space in the *Live Stock Journal*, and they started the *Fanciers' Chronicle*, under Mr. E. Brown's editorship. In these pages will be found suggestions in many practical matters, and from time to time I shall call attention to the various improvements which may arise. Some it will be found are of more especial value in other parts of the world, and my intimate acquaintance with foreign lands justifies me in offering suggestions which would be impertinent in a mere theorist. But one thing I shall continue to do, *i.e.*, be ready to receive instruction from any quarter from which it may come, and frankly to acknowledge an error when it has been discovered.

In this edition I produce facts showing what is being done commercially in France, Egypt, and India, and I can now also add, in Greece. England has not been stationary, for many farmers and families with small areas of land are doing good work in extending largely their poultry operations. It would be wrong to say that everyone succeeds in hatching or rearing artificially. I have known of some entire failures, but they are certainly not one per cent. Others who failed in their first attempts soon found out the mistakes they had made.

The work is divided into several heads:—1. The Theory of Hydro-Incubation: As regards public results, caponing and poultry farming, origin of the hydro-incubator, hydro-rearing mothers, Egyptian system of artificial hatching, how to choose the position for a hydro-incubator. 2. The practice of Hydro-Incubation: Instructions for working a 90-egg hydro-incubator, useful hints for beginners, means of boiling water, the 250-egg hydro-incubator, the 50s. cheap hydro-incubator, the clucker, the drying box; rearing artificially—the hydro-rearing mother, the open-air rearer, the "1880" rearer, the syphon mother and drying mother, feeding young chicks; fattening poultry—the fattening pen, French cramming machine; egg testing—the use of the tell-tale, hints on eggs for sitting purposes. 3. Commercial Poultry Farming: Prices and general information, poultry dressing for market, caponing and poultry manure; French breeds of poultry. 4. Results of Hydro-Incubation: Hemel Hempstead tournaments, official reports of public trials at five more shows, particulars of work done with hydro-incubators and rearers.

The work is well illustrated by engravings and is in every respect a practical and reliable work.

SIX LECTURES ON PHYSICAL GEOGRAPHY.

"Six Lectures on Physical Geography." By the Rev. SAMUEL HAUGHTON, F.R.S., &c., Fellow of Trinity College, and Professor of Geology in the University of Dublin. Dublin: Hodges, Foster, and Figgis, Grafton-street. London: Longman, Green and Co., Paternoster-row. 1880.

THIS interesting work forms the substance of lectures delivered in 1876, and they are now published with some additions to the lectures as actually delivered.

Six lectures were delivered, and they are divided under distinct heads. To show the comprehensiveness of the lectures we give the title of each.

Lecture I. The Past History and Future Prospects of the Globe on which we Live.

Lecture II. Continents and Oceans, Volcanoes and Mountains.

Lecture III. The Law of Climate, Atmospheric and Oceanic Circulation.

Lecture IV. The Rivers and Lakes of Europasia.

Lecture V. The Rivers and Lakes of Africa and South America.

Lecture VI. The Geographical Distribution of Animals and Plants.

The work is well illustrated, and deserves the attention of all who take interest in Physical Geography, and to students especially it will be found very valuable.

ON A NEW SYSTEM OF PHOTOGRAPHY.

BY L. WARNERKE.

WHEN experimenting with various phosphorescent substances it occurred to me to apply it to photography, and the following are the results obtained up to the present moment:—

I prepare a phosphorescent plate, either rigid or flexible, by applying phosphorescent sulphide of calcium, either in the form of paint or powder, to the surface of glass or paper. The coating must be very smooth and uniform. Several substances can be used to cement the powder. Balmain's paint answers fairly well, but I suggest that albumen may be found more suitable, because it forms, when mixed with phosphorescent calcium, a coagulum which protects the phosphorescent material from the destructive action of the atmosphere (carbonic acid and moisture) more effectually than anything else.

A glass may be coated with collodion and a luminous surface formed on it. The film may be stripped off, and this will be found to be the best process by which to produce a smooth plate.

The plate so prepared, and previously kept in the dark, is inserted in the dark slide and exposed in the camera. After exposure it is removed to the dark room and put in contact with a sensitive collodion or gelatine dry plate. After suitable exposure by contact the sensitive plate can be developed and gives, as the result, a negative with perfect gradation, but reversed.

Theoretically, instantaneous exposure in the camera should be sufficient to give the requisite impression to the phosphorescent surface; and, if this surface could be produced sufficiently fine and smooth, it would be so practically. However, a few seconds' exposure with bright light is sufficient to render the luminous image easily discernible in the dark.

There is, besides this, the means of allowing a great range of exposure in the camera; since if the luminous image be not strong enough, prolonged exposure of the sensitive plate in contact with it will correct the shortcoming. By warming the plate bearing the luminous image the luminosity will instantly be increased, and there will be a corresponding effect on the sensitive plate.

The luminous impression, as shown in my previous paper on actinometers, is persistent, and this allows several negatives to be obtained from one luminous plate. By this means it is observed that contact printing is unsatisfactory for want of, or by too much, exposure; it can easily be remedied without the necessity of giving another exposure in the camera.

There is, however, a certain particularity which must be taken into consideration—the luminous image is not sharp. I repeated my experiments in regard to this fifteen times, and I came to the conclusion that the phosphoro-chemical focus is far away from the corrected focus of our lenses.

When once impressed the plate will remain luminous for many hours; but the luminosity can be extinguished by exposing it again to the light filtered through certain coloured transparent media. Respecting this I may remark that the most suitable extinguishing substance can only be found by actual experiment. I had several sorts of red and ruby glass, and only two of them acted as an extinguisher, but required an exposure of ten minutes to the sun's rays.

I found a green aniline colour dissolved in collodion or gelatine more serviceable. The exposure of two minutes to diffused daylight was sufficient to complete the extinction. Strange enough, I have green glass of exactly the same green colour, but it does not act as an extinguisher.

I may mention here that by exposing the phosphorescent plate behind a negative a negative luminous image is obtained. which can produce a positive on the collodion sensitive plate put in contact with it, and in this case it will be quite sharp.

If the phosphorescent plate be exposed to the light, and then put in contact with a negative covered with an extinguishing medium, and again exposed to the light, the opposite result to that previously described will be observed.

By using a phosphorescent plate it is possible to obtain a photograph of the red end of the spectrum. To do this the plate is exposed entirely to the light; and when the spectrum is projected on it the rays of low refrangibility will extingush the excited luminosity of the plate, leaving the lines of the spectrum luminous. This is printed on the gelatine or collodion plate.

The negative passed round for inspection was made under the following conditions: —The phosphorescent plate was exposed in the camera for one minute, using a rapid rectilinear lens. The light was of medium quality. A gelatine plate was put in contact with the luminous image for five minutes.—A communication to the Photographic Society of Great Britain.

LUNAR CAUSTIC FOR PURIFYING SPIRITS.

Although some sort of spirits are associated in our minds with lunatics, and others with "moon-shiners," the subject of which we are about to speak is of a quite different nature, being at once scientific and practical.

Berlien has discovered the fact that raw spirits can be purified by treatment with a solution of nitrate of silver and subsequent rectification. From two to two and a half parts of dry nitrate of silver are sufficient for one million parts of crude spirits, a ten per cent. water solution being employed. The odour is entirely removed from the worst quality of crude spirits by this infinitesimal amount of silver; a good quality of raw spirits requires correspondingly less, and a one per cent. or a one-hundredth per cent. solution of silver is then employed.—*Scientific American.*

RECENT AMERICAN AND FOREIGN PATENTS.

Messrs. William H. Burden and Frederick C. Burden, of Cleveland, Ohio, have invented an improved car axle journal oiler which is simple and effective. It consists of two conical wheels connected by a square shaft, and pressed against the journal by a spring contained in the journal box. An endless chain is suspended from the shaft and extends into the oil in the journal box.

Mr. John U. Mueller, of Detroit, Mich., has patented an improved jetty shutter. The invention consists of one or more rows of piles, driven some distance apart somewhat back from the line of breakers and on the line of the intended improvement, said piles being securely connected some distance above water level with longitudinal beams, and further stiffened and secured by braces and ties, while fastened to the inner longitudinal beams are the shutters, which are intended to form a settling basin for the mud, sand, clay, gravel, &c., driven by the waves toward the shore.

Messrs. William P. Woodruff and Charles H. Woodruff, of New York city, have patented an improved elastic packing for piston rods and other rods that slide through stuffing boxes. It is so constructed as to retain its elasticity when pressed down by the gland. It is formed of a central core of metallic turnings, surrounded by a layer of cloth and alternate layers of anti-friction metal and brass in the form of narrow strips wound spirally upon the cloth-covered core. and in the combination, with such packing rings, of an anti-friction metal seat, having a large ring grove in its upper side and two or more small concentric ring grooves in its lower side.

M. Eugene H. Angamar, of New Orleans, La., has pateeted a boiler adapted for application to horse cars without material changes. The invention consists in a boiler made in two portions, separated by a mediate chamber, the water and steam spaces of the parts being connected by pipes.

Messrs. Lewis H. Raymond, of New York city, and John Roberts, of Dunellen, N.J., have patented a life raft made with sides of equal height below and above the floor, and having independent cylindrical air chambers fastened thereto between the seats above and below the floor, and also having air chambers, made in compartments, formed between the sides at both ends of the raft. The gunwale on the top and bottom of the thwarts is held and braced by means of braces connecting the gunwale and the thwarts.

Mr. Christian J. B. Hirsch, of Zumbrota, Minn., has patented an improved pipe stem. The object of this invention is to furnish a short pipe stem which shall have the effect of a long one, cooling the smoke and allowin nicotine to condense from the smoke.

An improved hanging lamp, patented by Mr. Otto F. Eichberg, of New York city, consists in combining with a cup perforated at the top, and forming an extension of the tube, an adjustable extension having an interior depending flange and exterior absorbent.

Mr. John S. Birch, of Orange, N. J., has patented a novel key ring, so constructed that keys and other articles can be conveniently placed upon and removed from it, and which will not be liable to become opened accidentally. The invention consists in constructing the key ring of a strip of metal bent into V form, with rounded angle, having its end parts bent inward and outward to form shoulders, having one of its ends longer than the other and bent into U form, and having a lug upon one end and a recess in the other end.

Mr. Augustus J. Kuhn, of Lewistown, Pa., has patented an improved drying apparatus, intended more particularly for drying sand, which, by its pecular nature, is difficult to dry and inconvenient to handle; but this improved machine may be used to advantage in drying any material that will run through the machine. The principal objects of the invention are, first, to permit the use of exhaust steam for producing the drying heat; second, to save handling of the material from the time it is placed in a wet condition in the machine to its delivery in a dry condition; and, third, to permit the regulation of the feed and delivery according to the heat and condition of the material and to prevent clogging of the feed.

Mr. Jesse M. Harr, of Baltimore, Md., has patented improvements in that class of skylights which are made strongly and studded with thick glass discs and placed in the side walk for the purpose of illuminating the dark recesses of a cellar or vault without allowing the entrance of rain and without breaking up the continuity of surface or weakening the pavement of such points.

Mr. John F. Henderson, of Franklin, Ky., has patented an improved coffee pot designed to more thoroughly extract the strength of the coffee and without boiling. A pendent cylindrical water receptacle is placed in the top of the pot, and is provided with a straining sack below, in which is contained the ground coffee.

In preserving fruit, vegetables, and meats by what is known as the "refrigerating" process, a current of air of reduced temperature is, in many instances, forced into and through the chamber or receptacle containing the substances to be preserved. In other cases the air is drawn from a well or through a tube passing through a collar, the current being established and maintained by the rarefaction of the air in the preserving chamber. Mr. Louis G. Volkmar, of New York city, has patented a portable apparatus for use in drying fruit, &c., by means of a cold air current, which is conducted through a tube that traverses an ice box, and is so arranged therein that ice may be packed around and in contact with it.

An efficient and powerful implement for raising stumps, roots, rocks, and other objects, has been patented by Mr. William H. Wright, of Belmont, N.H. The invention consists of a vertical U-shaped frame in which moves a ratchet bar, the frame being provided with a lever for lifting the ratchet bar, a latch for retaining the bar at the point to which it is lifted by the lever, and springs for throwing the latch in and out of engagement with the ratchet bar.

THE ZOOLOGICAL SOCIETY.

June 1.—Prof. W. H. Flower, President, in the chair.—Mr. Sclater made some remarks on the principal objects he had noticed during a recent inspection of the Zoological Gardens of Berlin, Hamburg, Amsterdam, the Hague, and Antwerp.—The secretary exhibited a spider of the genus Tegenaria, taken within three miles of Cape Town, on the back of a horse, which had subsequently died, it was said, from the effects of the bite.—Mr. G. E. Dobson exhibited some new and rare species of bats, and made some further remarks as to the date of the receipt of the dodo bones exhibited by him at a former meeting.—Lord Lilford exhibited and made remarks on some nests and eggs of the flamingo, taken in the marshes of the Guadalquivir, below Seville, in April, 1879. He also exhibited hybrid pheasants, between males of Reeves's pheasant and hens of the common pheasant.—Papers were read by Mr. E. W. H. Holdsworth on the distribution of the crayfish (Astacus) in Spain; by Prof. F. J. Bell, on some species and genera of the Temnopleuridæ, in the course of which he described the method he had adopted in comparing different species, and species at different stages in growth; he also directed especial attention to the differences in the size of the generation pores in *Amblypneustes formosus*, and discussed the specific characters of *Salmacis globator*; from Dr. A. Günther, on a collection of mammals from Japan; by Mr. G. E. Dobson, on a new species of bat, of the genus Natalus, from Jamaica, which he proposed to name *N. micropus*; and by Mr. A. W. E. O'Shaughnessy, on a new species of lizard, of the genus Uromastix, from Zanzibar, which he proposed to call *U. princeps.*

ADVERTISING COVER FOR THE "SCIENTIFIC REVIEW."

It was intended that the present number should have been published with a cover in which the Advertisements would appear. Circumstances have prevented this; and a Specimen Cover to be hereafter adopted can be had by Advertisers or others on application.

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President, SIR ANTONIO BRADY.

THE SESSION 1879—1880
IS ENDED.

The Balance Sheet 1879-80 can now be inspected.

Subscriptions are payable to Mr. G. A. STRETTON, the Receiver, 4, St. Martin's-place, S.W., who is the proper official to give receipts.

F. W. CAMPIN, Sec.

Proceedings of the Institute.

The Institute being out of Session, there is no business to report.

Monthly Notices.

Les Mondes gives, from some source not specified, an account of a so-called electric girl, living at London, in Canada, whose hand cannot be touched save on penalty of an electric shock. She can give a violent shock to a chain of fifteen or twenty persons who join hands, and she has the power of magnetic attraction. Packets of needles, even if wrapped up in paper, hang suspended from her finger-ends. If she enters a room all the persons present undergo a perceptible influence; some are made drowsy, and others feel indisposed and enervated until her departure. A sleeping child awakes at her approach, but a slight caress with her hand sends it to sleep again. [How, when her touch communicates an electric shock?] Animals are equally influenced by her; a favourite dog of the family remains for entire hours at her feet, as motionless as if dead. Very strange, if true.—*Journal of Science*.

Royal Society.—Among other papers read before the Royal Sooiety are—"Notes of Observations of Musical Beats," by A. J. Ellis, F.R.S., &c.; "The Aluminium Iodine Reaction," by Dr. J. H. Gladstone, F.R.S.; "On the Critical Point of Mixed Vapours," by James Dewar, F.R.S.; "Experimental Researches on the Electric Discharge with the Chloride of Silver Battery," by W. De la Rue, D.C.L., F.R.S., and Dr. H. W. Müller, F.R.S.; and "On the Lowering of the Freezing-point of Water by Pressure," by James Dewar, F.R.S.

The Revival of the Medical School at Oxford, which is now practically in abeyance, is the subject of a petition from the medical profession to be presented to Parliament shortly.

Substances possessing the Power of developing the Latent Photographic Image is the subject of a communication by Mr. Carey Lea, of Philadelphia, to the American Philosophical Society. The most active agents were found to be the borate, phosphate, sulphide, and oxalate of iron respectively, dissolved, the phosphate in neutral oxalate of ammonium, and the others in neutral oxalate of potassium.

A "spark tube" for detecting inflammable gas in collieries was recently brought before the Manchester Geological Society by Dr. Angus Smith. Producing ignition by the compression syringe is well known. Into a tube similarly arranged, the bottom of it being of strong glass, some spongy platinum was placed. The syringe was filled with air in any suspected place, and the piston, being driven home powerfully, ignited the gas if any were present. By this instrument 2½ per cent. of marsh gas had been detected.

Artificial Indigo.—Prof. Baeyer has discovered and patented the method of obtaining artificial indigo, which is to be worked on a commercial scale by the Baden Aniline Company. The indigo is obtained from chloride of isatine, which is produced from benzole.—*Athenæum*.

The beautiful scarlet iodide of mercury appears quite white when viewed by the yellow light of the flame of sodium, according to Herr von Jüptner's communication in the *Chemiker Zeitung*.

The thermo-electric pile of Melloni, according to M. Exner, in a communication made by him to the Vienna Academy of Sciences, is dependent on chemical as much as on thermic action. No current, he states, is generated if a pair of bismuth and antimony is plunged into nitrogen gas, whatever may be the temperature to which the junction is raised. The same result is obtained with many other metals. Not heat only but chemical action must be brought into play to generate an electric current.

The Density of the Vapour of Iodine.—L. Troost asserts that the density of the vapour of iodine decreases as well at low as at high temperatures. All the hypotheses which have been formed, based either upon a dissociation of iodine or upon an isomeric change, appear to him not very admissible. In the present state of our knowledge nothing warrants us to suppose that a partial vacuum suffices to produce a modification of this nature. The only consequences which necessarily flow from the experiments made at high temperatures or at low pressures, are that the coefficient of the expansion of iodine is variable with the temperature, and that its coefficient of compressibility varies with the pressure. All the hypotheses proposed to explain these results should take this double variation into account.

The Scientific Review
AND
SCIENTIFIC AND LITERARY REVIEW,
A RECORD OF PROGRESS IN
ARTS, INDUSTRY, AND MANUFACTURES.
INCORPORATING THE
JOURNAL OF THE INVENTORS' INSTITUTE.

AUGUST, 1880.

EDUCATION AND INDUSTRIAL PROGRESS.

"SAVE us from our friends" is a well-known saying of old which seems likely never to lose its pertinency. Certainly as regards the professed friends of education of the present day, this aphorism loses not a jot of its aptitude of application, for nearly all those who stand forward as advocates of public instruction are entirely possessed with the idea that education is essentially a matter of book learning, and although they may be led by the movements of the day to give some heed to the dissemination of that kind of knowledge which can be gathered up withont books, and as to which books are merely records of its progress, yet any attention they may thereto give is utterly devoid of that earnest appreciation of the necessity for the spread of the knowledge of things around us, which is the prime requisite for the advancement of real useful learning. That this should be no matter of surprise will be evident off-hand to all who remember, that until recent times, those persons who were deemed scholars issued forth from our ancient universities with craniums well stored with Greek, Latin, grammar, logic, and mathematics of the abstruse kind, and, as a polish to these, poetry and fiction derived from the works of modern authors of eminence were conjoined; hence, those who possessed much of this kind of knowledge were deemed learned men. Now, as some of the principal men belonging to our public press have been thus educated, it is not to be wondered at, that when writing on education they favour the spread of such knowledge as we have adverted to, and that their views are of course helped on by their subordinates. Common sense will hence teach us to expect that men who have not had the advantage of much education of any sort,—from which class the foremost of our busy men in State and Municipal affairs are drawn, —echo the sentiments of the public writers,—and that so it comes to pass that all education is made to consist of an affair of books and cram, whilst the intelligent—even scientific—pursuit of a handicraft or a technical avocation, however important, is made to stand outside the educational category. So that a youth who may be very ill fitted by brain formation to receive and assimilate strictly literary knowledge, is compelled to *waste* (we use the word advisedly) some of the best of his early years in the fruitless task of attempting to become a man of literary culture, not being allowed to use his time in any other way until he has satisfied the mighty idol Cram by proving himself equal to the requirements of his "standards."

Such a system as this is mere moonshine and rubbish, being simply one of the illustrations of the old endeavour to pack round men into square holes and square men into round holes. And if the defence of the system be that it is as regards the general effect on the country at large, good, this can surely never be seriously maintained by any thoughtful and truthful person, for in no case can it be desirable to keep the children of the people from commencing the practice of the arts of civilization till they have arrived at an age when the early training becomes irksome and difficult, simply because they have not mastered some niceties of grammar or other general school learning. It would be just as wise to prevent a child from practising singing, or making the first efforts to play on a musical instrument until he had previously become well acquainted with the science of music!

Now that we have a government which is said to be of a more popular character than any that has preceded it, one might well hope to find that instead of the absurd educational nostrums we have referred to being insisted upon, more enlightened ideas would prevail; but, as a matter of fact, such a hope one may almost reckon as forlorn; for the School Board system, notwithstanding its incidence of overburdening taxation, which, however, does not fall directly on the working classes, is supposed to be in great favour with those classes; therefore a popular government must, of course, take care to carry out school boardism to the letter. In fact, if the good pleasure of Demos be worth securing, it should be rendered more exacting and stringent, so that that word Compulsion, so dear to modern men of liberty, may always accompany education without regard to its essentially good or evil effects on the community.

But untoward as the aspect of the case appears, there is one ray of hope which cheers us with the thought that better counsels may yet be followed. We now have connected with the Government Education Department the Right Honourable Mr. Mundella, M.P., and as he is practically acquainted with the importance and necessity of industrial progress, we trust that he will bring about such modifications in our educational system as shall advance real technical instruction whether in its scientific or practical phases, so that practical science may be mightily advanced to the great benefit of our age and country. To do this, general learning need be by no means depressed, but on the contrary be still in a position of high estimation.

Proceedings of Societies.

ROYAL SOCIETY.

May 27.—The President in the chair.—The following papers were read:—On "Some Thermal Effects of Electric Currents," by Mr. W. H. Preece; "A Preliminary Account of the Reduction of Observations on Strained Material, Leyden Jars, and Voltameters," by Profs. Ayrton and Perry; on "The Structure and Development of the Skull in the Batrachia," Part III., by Mr. W. K. Parker, F.R.S.; on "The Relation of the Urea to the Total Nitrogen of the Urine in Disease," No. I., by Dr. W. J. Russell, F.R.S., and Mr. S. West; on "The Amount of Nitrogen excreted in the Urine of Man at Rest," No. II., by Mr. S. West and Dr. W. J. Russell, F.R.S.; on "The Artificial Formation of the Diamond," by Mr. J. B. Hannay; and "Further Note on the Spectrum of Carbon," by Mr. J. N. Lockyer, F.R.S.

June 3.—Annual meeting for election of Fellows.—The President in the chair.—The following were elected:—Prof. J. Attfield, H. F. Blanford, T. Clifford-Allbutt, M.D., Rev. W. H. Dallinger, W. T. Thiselton Dyer, Lieut.-Col. H. H. Godwin-Austen, the Right Rev. C. Graves, D.D., Bishop of Limerick, Prof. D. E. Hughes, H. M. Jeffery, Prof. F. M'Coy, J. F. Moulton, Prof. C. Niven, J. Rae, LL.D., Prof. J. E. Reynolds, M.D., and W. A. Tilden.

June 10.—The President in the chair.—The following papers were read:—On "A Fourth State of Matter," by Mr. W. Crookes; on "*Bacterium fœtidum*, an Organism associated with Profuse Sweating from the Soles of the Feet," by Dr. Thin; on "The Solubility of Solids in Gases," and on "The State of Fluids at their Critical Temperature," by Mr. J. B. Hannay; "Note on the History of the Carbon Spectrum," and on "The Spectra of the Compounds of Carbon with Hydrogen and Nitrogen," by Profs. Liveing and Dewar; on "Certain Effects of Stress in Soft Iron Wires," by Prof. J. A. Ewing; and "Memoir on Abel's Theorem, with Addition by Prof. Cayley," by Mr. R. C. Rowe.

June 17.—The President in the chair.—The Right Hon. A. J. Beresford Hope was elected a Fellow.—The following papers were read:—"Notes of Observations on Musical Beats," by Mr. A. J. Ellis; on "The Critical Points of Mixed Gases," by Prof. Dewar; on "The Lowering of the Freezing Point of Water by Pressure," by Prof. Dewar; "The Aluminium Iodine Reaction," by Dr. Gladstone and Mr. A. Tribe; "Preliminary Note on the Ossification of the Terminal Phalanges of the Digits," by Messrs. E. A. Schäfer and F. A. Dixey; on "The Organisation of the Fossil Plants of the Coal-Measures, Part XI.," by Prof. W. C. Williamson; "Note on the Discovery of a Fresh-water Medusa of the Order Trachomedusæ," by Prof. E. Ray Lankester; "Agricultural, Botanical, and Chemical Results of Experiments on the mixed Herbage of Permanent Meadow, Part II. The Botanical Results," by Mr. J. B. Lawes and Dr. Gilbert; "Preliminary Note on Some Points in the Pathology of Anthrax, with especial Reference to the Modification of the Properties of the *Bacillus anthracis* by Cultivation, and to the Protective Influence of Inoculation with a Modified Virus," by Dr. W. S. Greenfield; on "The Miocene Plants Discovered on the Mackenzie River," by Prof. O. Heer; on "The Electric Condition of the Terminals of a Vacuum Tube after the Connection with the Source of Electricity has been Broken," by Mr. W. de La Rue and Dr. Hugo Muller; on "The Constants of the Cup Anemometer, Part II.," by Rev. Dr. Robinson; "Note on the Bearing on the Atomic Weight of Aluminium of the Fact that this Metal occludes Hydrogen," by Prof. J. W. Mallet; on "The Spectrum of the Flame of Hydrogen," by Mr. W. Huggins; and on "The Spectrum of Water," by Profs. Liveing and Dewar.—The Society adjourned over the long vacation.

ASIATIC SOCIETY.

May 24.—Anniversary meeting.—Sir H. C. Rawlinson, President, in the chair.—The following were elected as the Council and Officers for the ensuing year, 1880-1: President and Director, Sir H. C. Rawlinson; Vice-Presidents, Sir E. C. Bayley, Sir E. Colebrooke, Bart., Sir R. Temple, and Col. Yule; Council, E. L. Brandreth, Major-General Dalton, Sir B. Ellis, J. Fergusson, A. Grote, Col. Keatinge, General Sir A. Kemball, Lieut.-Col. Lewin, General Maclagan, Sir W. Merewether, Major Mockler, Sir W. Muir, Lieut.-General Sir H. Norman, General Sir A. Phayre, Lieut.-General Sir H. E. Thuillier; Secretary, Mr. W. S. W. Vaux; Assistant-Secretary, Mr. F. W. Holt; Hon. Secretary, Mr. R. N. Cust; Treasurer, Mr. E. Thomas.—The report of the Council was read, from which it appeared that fifty new members had been elected during the last year, against a loss by death of eight. Brief notices were given of Lord Lawrence, the Rajah of Beswan, Sir J. Low, C. H. Damant, Capt. C. J. F. S. Forbes, A. D. Mordtmann, and Prof. Schiefner, together with a general survey of the progress of Oriental Studies during the last year.

June 7.—Sir H. C. Rawlinson, President, in the chair.—Mr. W. A. Tyssen-Amhurst, M.P., and Mr. H. Wills were elected Residents, and Messrs. T. Plowden, J. W. Best, S. E. Peat, and J. K. Birch non-Resident, members.—Dr. Abel read a paper on "The Origin of Language as traced through the Egyptian Tongue," in which he pointed out that in the ancient hieroglyphical period the Egyptian language was to a large extent a language of homonyms and synonyms, in which many roots had a variety of meanings, while many meanings could be expressed by a great variety of roots. Dr. Abel then compared this primitive stage of language with the late Coptic, and, finding the synonyms gone or replaced by distinct derivatives, came to the conclusion that language was only gradually developed to an intelligible state. The general nature of this process divests it of much of its surrounding mystery, as numerous words are invented for every conception, or tentatively used by succeeding generations. A continuous choice must then have been made, until a sound most responsive to the national sense was fixed upon and more or less exclusively adopted. Each root had no doubt originally a variety of significations. Dr. Abel then proceeded to demonstrate two important facts in this gradual evolution of sense and sound, namely, the intellectual and phonetical inversion of roots. In Egyptian many roots, he remarked, mean one thing and its opposite too, and where there is no variation in sound, the context alone can decide which signification is required for the particular case. In other words, two opposite notions, each expressed by separate words, are formed into a compound, denoting either one or the other of the two conflicting meanings.

NUMISMATIC SOCIETY.

May 20.—W. S. W. Vaux, Esq., V.P., in the chair.—The Hon. J. Gibbs and Dr. W. Pauli were elected members.—Sir A. Phayre exhibited a silver coin lately found in Pegu, said to be of the tenth or eleventh century. The coin had on the obverse a conch shell with a crab inside it.—Mr. Hoblyn exhibited an original warrant, dated February 14th, 1627, to Sir W. Parkhurst, Warden of the Mint, altering the value of certain gold and silver coins; also a selection of rare milled shillings from Elizabeth to George III.—Mr. Krumbholz exhibited a proof in gold of a Keepang piece of 1873 of the East India Company; also two rare Oxford pound pieces, of 1642 and 1644, and an unpublished variety of a twenty-shilling Scottish piece of Charles I., with the letter F under the horse's feet.—Mr. Copp exhibited a portion of a hoard of late Roman denarii found at a farm called Rheworthen Īsa, near Aberystwith, Cardiganshire.—Mr. H. S. Gill communicated a paper on "Unpublished Seventeenth Century Yorkshire Tokens, with Contemporary Notes on some of the Issuers of Hull and other Towns." In the paper Mr. Gill described about fifty new types.—Mr. L. Bergsoe, of Copenhagen, communicated a paper, in which he discussed the place of mintage, &c., of certain coins of the Cuerdale find. These were the coins inscribed "Ebraice Civitas, Cvnetti," and "Qventovici," and he attributed them to the towns of Evreux, Condé, and Quentovic respectively, three towns in the north of France, near the Scheldt. In the inscription "Cirtena Acrten" Mr. Bergsoe traced the name of Cnut Rex, and in Siefredvs that of a Danish chief. Mr. Bergsoe from these premises proceeded to argue that none of these coins was ever struck in England, but that the type of the English coin was adopted by foreign moneyers on account of the high estimation in which these coins were held.—General A. H. Schindler communicated a short paper on some unpublished Mohammedan coins acquired by him during a recent tour in Kerman (Caramania). These coins were for the most part struck by Abu Said Bahadur Khan, last Moghul emperor of Persia, and by Shah Rukh.

LINNEAN SOCIETY.

May 24.—Anniversary meeting.—Prof. Allman, President, in the chair.—Following a few introductory remarks, the President referred to the sad loss during the year of such men as the late Prof. Bell, the veteran J. Miers, General Munro (famed for his knowledge of the grasses), Dr. D. Moore, of Dublin, Mr. W. Saunders, Mr. E. W. Cooke, R.A., artist and naturalist, Mr. M. Allport, of Tasmania, and Mr. T. Atthey, of Tyneside celebrity, a worthy Associate of the Society. Of foreign *savants* Prof. Brandt, of St. Petersburg, Dr. Fenzl, of Vienna, and W. P. Schimper, of Strasbourg, deserve mention.—The Secretary then read his report, showing that since the last anniversary ten Fellows, three foreign members, and one Associate had died, and three Fellows had withdrawn. On the other hand, twenty-eight new Fellows, three foreign members, and four Associates had been elected. The library showed a marked increase in its usefulness, and considerable additions had been made by purchase, exchange, and donation. The evening meetings also had been unusually well attended during the session.—The Treasurer, in his report, pointed out that although the late commercial depression had more or less affected all the scientific societies, happily its effect on the Linnean was but transitory. At present the Society is quite free of debt, has an invested capital of £3,730 12s. 8d., and the balance at the bankers' and in hand at this date is £522 18s. 2d. Since 1875 the invested capital has been doubled, and this in spite of the extra working expenses being much increased since the Society occupied their rooms at Burlington House.—The Fellows thereafter proceeded to ballot for the Council and Officers. Five of the Council retiring, as customary, there were elected in their places Messrs. E. R. Alston, G. Bentham, G. Busk, Dr. M. Foster, and Mr. B. D. Jackson. For the Officers, Prof. G. J. Allman was re-elected President; Mr. F. Currey (the outgoing Secretary), Treasurer; Mr. E. R. Alston, Zoological Secretary; and Mr. B. Daydon Jackson, Botanical

Secretary.—The President then read his anniversary address, taking for his subject "The Vegetation of the Riviera: a Chapter in the Physiognomy and Distribution of Plants."

JUNE 3.—Prof. Allman, President, in the chair.—The Secretary read a paper on "The Specific Identity of *Scomber punctatus*, Couch, with *C. scomber*, Linn.," by Dr. F. Day. The specimen on which this observation has been made was captured on the coast of Cornwall in April last.—In a note on the anal respiration in the Zoea larva of the Decapods, by Mr. M. M. Hartog, he shows from an examination of living larvæ of Cancer that the terminal part of the rectum is slightly dilated, and possesses a rhythmic contraction and expansion duly associated with opening and closing of the anus. A clue to the ultimate transference of bronchial respiration may perhaps be found in the Entomostraca, where, in certain forms, food is obtained by a current from behind forwards, due to the movement of the setose or flat limbs immediately behind the mouth. Prof. Claus has shown that in Daphnia the latter processes have a respiratory function, while this animal possesses a mell-marked anal respiration.—Mr. G. Murray made a communication on "The Application of the Result of Pringsheim's recent Researches on Chlorophyll to the Life of the Lichen." Summarising Pringsheim's labours, and taking into consideration the views of Vines, Geddes, and Lankester, Mr. Murray arrives at the conclusion that we have in lichens fungal tissues, as the body of the thallus and the chlorophyll screen in the gonidial layer; that is, the chlorophyll is in one system of cells and the protoplasm apparently affected by it in another which is in contact. The light which traverses the chlorophyll-containing gonidial layer excites in the fungal tissues the decomposition of carbonic acid.—Mr. P. H. Carpenter, in giving the result of some researches of his on "The Genus Solanocrinus, Goldfuss, and its Relations to recent Comatulæ," stated that Schluter was perfectly justified in uniting Solanocrinus with Antedon. The latter author does the same with Comaster, though to Mr. Carpenter Goldfuss's description of this type appears to differ so much from all other Comatulæ that he prefers provisionally to regard it as distinct. Mr. Carpenter's observations on these crinoids are founded on a comparison of material from the Challenger Expedition with an extensive series of fossil forms, and he believes that variations in the development of the basals are useless as generic distinctions.

JUNE 17.—Prof. Allman, President, in the chair.—The Rev. G. B. Hunt, Mr. H. N. Moseley, the Rev. A. M. Norman, and Mr. E. A. Webb were elected Fellows.—Dr. Prior called attention to a rare case of a mistletoe parasitic on a mistletoe.—Lord Lilford exhibited, and remarks were made on, a series of skins, skulls, and horns of the wild sheep of Cyprus (*Ovis ophion*, Blyth).—Mr. E. M. Holmes showed an example of *Polysiphonia fastigiata* with its antheridia.—Preparations of the early stages of invertebrates from Naples and living specimens of the new fresh-water Medusa were exhibited by Mr. F. Crisp, and the growing point of Chara and the common ash by Mr. C. Stewart.—A paper was read by Mr. F. M. Campbell on "Certain Glands in the Maxillæ of Spiders." These, probably, secretory in function, he finds in *Tegeneria domestica*, and they have apertures on the inner side of the upper face, thence inclining towards the mouth. They increase in number with age, and become chitinous. Glands apparently similar in kind he also finds in several families of the spiders.—Mr. S. O. Ridley contributed a paper on "Two Cases of Incorporation by Sponges of Spicules foreign to them." In one Ciocalpta the dermis contained spicules derived from a species of Esperia, and in the other example of Alebion similarly Esperia spicules had been fused with its own individual tissues.—Prof. Allman then called attention to a remarkable Medusa, recently discovered by Mr. W. Sowerby in the fresh-water tank containing the *Victoria regia* at the Botanic Gardens, Regent's Park. Prof. Allman described the specialities of this small but elegant organism, whose congeners are altogether marine in distribution. How the swarms could have come into or been developed in the tank remains conjectural; for no fresh plant has been put into the tank for some years, nor has any sea water been added, or other material likely to have contained ova been introduced. The name *Limnocodium Victoria* has been assigned to this creature by Prof. Allman.—Mr. T. W. Campbell read a second paper on "The Stridulating Organs of *Steatoda guttata* and *Linyphia tenibricola*," which are demonstrated to be possessed by both sexes.—Dr. G. E. Dobson, in "Notes on *Aplysia dactylomela*," shows that there is difference of size and asymmetry of the right and left halves of the dental rows of the lingual ribbon, and he describes other structures appertaining to the mandibular plates.—Mr. G. Busk gave the results of his researches on the Polyzoa collected in the late Arctic expedition. He describes some new forms, and his determination of others differs from that arrived at by Prof. Smitt, of Stockholm.—In a paper on "The Natural Classification of the Gasteropoda," by Dr. J. D. Macdonald, the author elaborates with modifications and additions views formerly promulgated by him.—The sixth contribution to the Mollusca of the Challenger expedition by the Rev. R. B. Watson was taken as read. The author treats of the Turritellidæ, and describes nine new species.—A paper by Sir J. Lubbock, containing further observations on ants, was read.

ENTOMOLOGICAL SOCIETY.

MAY 5.—T. Stainton, Esq., V.P., in the chair.—Mr. P. Inchbald was elected a member.—Mr. W. C. Boyd exhibited a very pale specimen of *Nyssia hispidaria*, taken at Cheshunt.—Mr. M. J. Walhouse exhibited some Geodephagous beetles, which were found only on the summits of some of the highest mountains in India.—Mr. W. L. Distant exhibited a long series of specimens of the Madagascar homopteron *Ptyelus Goudoti*, Benn., to illustrate the extreme variability of the species. The series showed a gradation from melanic to albinic forms, and one specimen was asymmetrical in the markings of the tegmina, thus exhibiting the character of two varietal forms, an occurrence which Mr. Distant stated was not altogether exceptional in extremely variable species of the order Rhynchota.—Mr. T. R. Billups exhibited two living specimens of *Carabus auratus*, which had been found in the Borough Market.—In reference to a prediction by Mr. Wallace, that a sphinx moth would be found in Madagascar with a proboscis of sufficient length to reach into the nectary of *Anagræcum sesquipedale*, Mr. Pascoe stated that he had heard a rumour that such an insect had been discovered, and endeavoured, without success, to find corroboration of the statement from members of the Society.—Miss E. O. Ormerod made some remarks as to the contents of a work which she had edited and presented to the Society, and which contained the meteorological observations taken by Miss Molesworth for a period of forty-four years. Some attempt was made to contrast the meteorological conditions with the dominant phases of plant and animal life during that period.

CHEMICAL SOCIETY.

MAY 20.—Prof. H. E. Roscoe, President, in the chair.—The first paper was entitled on "The Action of Air upon Peaty Water," by Miss L. Halcrow and Dr. Frankland. In consequence of the statements of Dr. Tidy, in his paper on "River Water," as to the rapid oxidation of peaty matter in running water, the authors have studied upon an experimental scale the action of exceptionally strong peaty water upon atmospheric air. The authors concluded that if peaty matter is oxidised, the process takes place with extreme slowness.—Dr. Frankland then read a paper on "The Spontaneous Oxidation of Organic Matter." This was practically a criticism of the conclusions drawn by Prof. Tidy in his paper alluded to above. The author concluded that there is no evidence of the destruction by oxidation of the dead, still less of the living, organic matter in a river.—Prof. Tidy, in reply, pointed to the statistics of the last ten years, which proved that many towns which derived their water supply from river water which had been polluted with sewage were as free from fever, &c., as other towns supplied by deep well water.

JUNE 3.—Prof. H. E. Roscoe, President, in the chair.—It was announced that a ballot for the election of Fellows would take place on June 17.—The following papers were read, on "Some Products of the Oxidation of Paratoluidine," by Mr. W. H. Perkin; on "The Detection of Foreign Colouring Matter in Wine," by Dr. A. Dupré. The true colouring matter does not dialyze. All the artificial colouring matters except alkanet dialyze freely; and that cubes of gelatine jelly soaked in the wine for forty-eight hours become scarcely tinged below the surface if the wine is pure, but if coloured with magenta, &c., the cube is stained to the middle. Alkanet is easily recognised by its absorption spectrum; on "The Action of Organozinc Compounds upon Nitrites and their Analogues: I. Action of Zinc Ethyl on Azobenzine," by Messrs. E. Frankland and D. A. Louis: II. on "The Action of Zinc Ethyl upon Benzonitrile," by Messrs. Frankland and J. C. Evans; on "The Relation between the Molecular Structure of Carbon Compounds and their Absorption Spectra," by Prof. W. N. Hartley. The author has photographed the spectra of various substances; he concludes that no molecular arrangement of carbon atoms causes selective absorption or gives absorption bands unless three pairs of carbon atoms are doubly linked together in a closed chain. The most remarkable substance in this respect is anthracene, which, when diluted one in fifty millions, gives a considerable and distinct absorption; on "A Simple Method of determining Vapour Densities in the Barometric Vacuum," by Messrs. C. A. Bell and F. L. Teed. It consists of a modification of Hofmann's apparatus.—Mr. C. T. Kingzett made a verbal communication to the effect that he had recently investigated the question of the slow oxidation of moist phosphorus, and had obtained evidence that both ozone and hydroxyl were formed.

JUNE 17.—Prof. H. E. Roscoe, President, in the chair.—The following papers were read: on "Pentathionic Acid," by Messrs. T. Takamatsu and W. Smith. The authors have examined the evidence for and against the existence of this substance; they conclude that it does exist, and give a new method of preparing it by the action of a very strong solution of iodine in hydriodic acid upon lead theiosulphate; "Preliminary Note on some Orcinol Derivatives," by Dr. J. Stenhouse and Mr. C. E. Groves. The authors have confirmed their previous conclusion that halogen derivatives of orcinol exist containing five atoms of bromine, &c., both the hydrogen atoms in the hydroxyl groups being displaced; on "The Determination of Carbon in Soils," by Messrs. R. Warington and W. A. Peake. Oxidation with potassium permanganate gives 92 per cent. of the total carbon, but digestion with chromic acid, &c., only 79 per cent. The best method is combustion with oxide of copper in a stream of oxygen; "Note on Camphydrene," by Dr. H. E. Armstrong. In this note the author sharply criticises a recent paper by Dr. Letts in the Berlin *Berichte*, and as a result of some experiments completely confirms the statement of Montgolfier that the substance formed by the action of sodium on the solid hydrochloride from turpentine oil is a mixture, and not a hydrocarbon having the formula $C_{10}H_{17}$, as asserted by Dr. Letts; on "The Action of Nitric Acid upon Diparatolylguanidin," by Mr. A. G. Perkin. Dinitrodiparatolylguanidin, melting at 205°, was obtained in red crystals, also by a slight modification dinitrodiparatolylurea, melting at 233°; on "Some Higher Oxides of Manganese and their Hydrates," by Mr. V. H. Veley. The oxide was precipitated by chlorine from a pure solution of the acetate, and was then heated in a current of air or oxygen hydrates. $Mn_6O_{11}, 2H_2O$, $2(Mn_6O_{11}), 3H_2O$, and $Mn_{12}O_{33}H_2O$ were obtained, but in no case was the dioxide formed; on "A New Method of preparing Dinitroethylic Acid," by Dr. E. Frankland and Mr. C. C. Graham. This consists in passing nitric oxide into a mixture of zinc ethyl and sodium ethyl, to which a suitable solvent, such as benzene, has been added; on "The Action of Organozinc Compounds upon Nitrites and their Analogues," by Dr. E. Frankland and Mr. H. K. Tompkins. The action of zinc ethyl upon phenylacetonitrile is studied; on "The Action of Benzoyl Chloride on Morphine," by Dr. C. R. A. Wright and Mr. E. H. Rennie. The end result is always dibenzoyl morphine; "An Examination of Terpenes for Cymene by means of the Ultra-violet Spectrum," by Prof. W. N. Hartley. The author has examined specimens of orange oil, French turpentine, and Russian turpentine by photographing their absorption spectra; the first two oils were free from cymene, the last contains certainly less than 4 per cent.; "Notes on the Purple of the Ancients," by Dr. E. Schunck.—The Society adjourned over the summer recess.

METEOROLOGICAL SOCIETY.

MAY 19.—Mr. G. J. Symons, President, in the chair.—Messrs. T. H. Edmonds, F. Ekless, A. H. Taylor, and T. Turner were elected Fellows.—The following papers were read: "Variations in the Barometric Weight of the Lower Atmospheric Strata in India," by Prof. E. D. Archibald; "A Sketch of the Winds and Weather experienced in the North Atlantic between lats. 30° and 50° during February and March, 1880," by Mr. C. Harding. The period embraced in this paper includes the time during which the Atalanta was on her homeward passage, as she left Bermuda on January 31st. From the data collected it is shown that a gale blew in the Atlantic every day throughout the two months, excepting on February 21st and 24th to 27th. With especial reference to the Atalanta, it appears probable that she would not have met with any exceptionally severe weather earlier than about the 12th or 13th of February, and allowing that she had averaged from five to six knots per hour on her homeward course, she would at that date have inevitably encountered a severe hurricane. A heavy gale is noted on the 12th in 38° N. and 45° W., which is in the direct homeward-bound track from Bermuda, and if the Atalanta had only averaged four knots per hour on her homeward course she would have fallen in with this gale. The storm of the 12th and 13th may fairly be considered as about the most severe during the two months here dealt with.—On "The Meteorology of Mozufferpore, Tirhoot, for the Year 1879," by Dr. C. N. Pearson.—Mr. D. Winstanley exhibited his solar radiometer.

JUNE 16.—Mr. G. J. Symons, President, in the chair.—Dr. T. W. Barry, Messrs. A. W. Martin and C. E. Peek were elected Fellows, and Senor A. Aguilar and Dr. H. H. Hildebrandsson honorary members.—The following papers were read: "Ozone in Nature, its Relations, Sources, and Influences, &c., from Fifteen Years' Observations, Ashore and Afloat, under all Conditions of Climate," by Dr. J. Mulvany. The meteorological elements with which ozone is most intimately associated are such as occasion high vapour tension and a high degree of saturation; therefore it is promoted by wind passing over a large aqueous expanse and by heat producing rapid evaporation. Hence heat, if humid, is no bar to atmospheric ozonisation; but no definite relation exists in the atmosphere between heat *per se* and ozone; its relation to humidity is more definite and direct, but subject to many exceptions; in consequence of this relation it most abounds where its chemical qualities render it most useful. It appears to be formed in the upper strata and to be carried downwards by raindrops, whose office is vehicular. The spherules of water which constitute clouds, and have their origin in radiation and condensation, have a similar office. Ozone does not appear to diffuse readily downwards, so that when the lower strata are robbed of ozone by jungle, &c., a considerable difference in the ozonic condition close to and at 170 feet above the surface may exist. The author is of opinion that no disease can be clearly traced to ozone as met with in the atmosphere.—On "The Average Height of the Barometer in London," by Mr. H. S. Eaton; "Note on a Waterspout observed at Morant Cays, Jamaica, March 23rd, 1880," by Lieut. A. Carpenter; "Account of a Balloon Ascent from Lewes in a Whirlwind, on March 23rd, 1880," by Capts. J. Templer and H. Elsdale; "Results of Meteorological Observations made at Stanley, Falkland Islands, 1875-77," by Mr. W. Marriott; "A New Thermograph," by Mr. W. D. Bowkett; and on "The Winter Climate of Davos," by Dr. C. T. Williams.

PHILOLOGICAL SOCIETY.

MAY 21.—Anniversary meeting.—Dr. J. A. H. Murray, President, in the chair.—The Chairman read his annual address; Mr. H. Sweet read his report on late investigations into vowel-phonology by continental scholars; and Dr. R. Morris his report on Pali.—The following members were elected the Society's officers for 1880-81: President, A. J. Ellis; Vice-Presidents, The Archbishop of Dublin, Drs. Guest, Stokes, Morris, and Murray, and H. Sweet; Ordinary Members of Council, Messrs. E. L. Brandreth, Prof. C. Cassall, C. B. Cayley, R. N. Cust, Sir J. F. Davis, F. T. Elworthy, H. H. Gibbs, E. R. Horton, H. Jenner, Prof. R. Martineau, Rev. J. B. Mayor, W. R. Morfill, H. Nicol, J. P. Postgate, Prof. C. Rieu, Rev. A. H. Sayce, Dean Scott, Prof. W. W. Skeat, H. Wedgwood, and Dr. Weymouth; Treasurer, B. Dawson; Hon. Sec., F. J. Furnivall.

JUNE 4.—Mr. A. J. Ellis, President, in the chair.—Mr. K. Spencer was elected a member.—The papers read were on "Aisle," by Dr. J. A. H. Murray, showing that the word, after having first had its Old French form in English, was confused with "ile," island, and spelt *ile*, and did not take its present form till Burke's time; on "Some Differences between the Speech of Edinburgh and London," by Mr. T. B. Sprague, such as *flesher* for butcher; *beast* for any animal, though as small as a lady-bird; *divider* for a soup-ladle; *house* for a flat, sixteen houses being in a "tenement" under one roof; *wrongous* (A.-S. *wrangwis*) for wrongful; *sort* the children, make them tidy; *soft* weather, showery; *presently*, at once, &c.; on "The Makua Language (one of the Bantu group, near Zanzibar)," by the Rev. C. Maples, a missionary and teacher. Dr. Bleek's sixteen "genders" or classes of the nouns with differing prefixes were completed, and the structure of the language explained. "Sister" was "female brother;" the original numerals went only up to five; the relative was wanting: "the man whom I saw" was "the man he saw [or "was seen," for there was no passive] my." The people were very kindly, clever, and interesting; very honest, but untruthful.

JUNE 18.—A. J. Ellis, Esq., President, in the chair.—Mr. W. R. Morfill read a paper on "Some Polabish Vocabularies." This language, belonging to the Slavonic family, became extinct in the earlier part of last century; a few lists of words, a song composed in it, some versions of the Lord's Prayer, &c., are all that remain. These vocabularies were examined at some length in the paper, and many interesting words cited. Some of the blunders made by the transcribers on account of their ignorance of Slavonic were also given. The labours of Schleicher and Hilferding were discussed. The former considered Polabish to belong to the Polish or Lechish (to use his own phraseology) division of the Western Slavonic family, Kashubish being the link between it and Polish properly so-called. To this branch its law of sound clearly assign it, especially the prevalence of nasals.—Mr. W. R. Browne read a paper on "The Distributions of English Place-Names," in which he gave a table of the results obtained by examining 10,492 names in Dugdale's "England and Wales." The names were classified under sixty separate headings according to their endings. Those ending in *ton* formed nearly one-fourth of the whole, being 2,545; *ham* and *ley* came next, with 702 and 653 respectively; while 1,703 were placed under miscellaneous. The endings were roughly grouped according to their origin, whether English, British, or Norse; and remarks were made on some of them, where the distribution threw light on their meaning or was otherwise curious. Thus Mr. Kemble's theory that names ending in *ing* indicate the original seat of an English colony was apparently negatived by the fact that the ending is almost entirely absent in South Suffolk.—A discussion followed, in which the President, Mr. Sweet, Dr. Murray, Dr. Morris, and others took part, and which turned partly on the general principles of such classification, and partly on the meaning of particular endings, as *ham*, *ley*, *side*, *hope*, and *wick*.

INSTITUTION OF CIVIL ENGINEERS.

MAY 25.—Mr. W. H. Barlow, President, in the chair.—The last ballot for the session resulted in the election of six members, viz., Messrs. J. S. Chorlton, R. A. Cordner, T. Joseph, A. Ross, J. T. Smith, and J. T. Stewart; of eleven associate members, viz., Messrs. C. H. Cooper, H. Dorning, B. W. Flatt, T. P. Gunyon, W. Hill, S. Hownam-Meek, H. J. Oddie, W. A. H. de Pape, H. J. Saunders, R. J. H. Saunders, and H. H. Scott; and of Lieut.-Col. G. E. L. S. Sanford as an associate.

PHYSICAL SOCIETY.

MAY 22.—The annual holiday meeting of this Society was held at Cambridge, in the Cavendish Laboratory, under the presidency Lord Rayleigh. Vice-President of the Society.—Lord Rayleigh explained a mode of limiting the aperture of the spectroscope telescope so as to alter the angular interval with which it can deal. The angular interval is determined by a grating made by winding a fine wire round the threads of two parallel screws.—Mr. Shaw exhibited a modification of Veinholdt's apparatus for distilling mercury.—Mr. S. Taylor exhibited an apparatus for showing the motion of particles in a wave of water, and a modification of Herschell's manometric flame apparatus for showing sound waves.—Mr. Poynting described an apparatus for altering the plane of each half of the pencil of rays from a polariser.—Mr. Glazebrook described a modification of Wiedemann's plan for measuring the rotation of the plane of polarisation of light. — Lord Rayleigh showed a device for getting transmitted yellow light from a combination of red and blue solutions in a glass cell of a certain thickness. The solutions were chromate of potash and litmus. The same effect was also obtained by covering two pieces of glass, one with a coat of litmus in gelatine, and the other with a coat of chromate of potash and gelatine. Lord Rayleigh also exhibited an improved colour box, based on the principle of Newton.

GEOGRAPHICAL SOCIETY.

May 31.—Anniversary meeting.—Right Hon. the Earl of Northbrook, President, in the chair.—The following gentlemen were elected Fellows: The Earl of Kimberley, Lieut. A. H. Mason, Messrs. P. Lloyd, J. Stedman, and W. A. Tyssen-Amherst.—The Founder's Medal, for the encouragement of geographical science and discovery, was awarded to Lieut. A. L. Palander, in recognition of the services rendered by him to geography as commander of the Vega in the late Swedish Arctic expedition, during which he safely navigated the ship along the unsurveyed shore of the Asiatic continent for nearly three thousand miles. The Patron's Medal was awarded to Mr. Ernest Giles for having led four great expeditions through the interior of Western Australia in the years 1872-6, during which six thousand miles of route were surveyed and twenty thousand square miles of new country discovered. A Gold Watch was awarded to Bishop Crowther, in recognition of the services he has rendered to geography during his numerous journeys in the region of the river Niger during the last forty years. The annual Geographical Medals offered by the Society to the chief public schools were then presented to the following successful competitors:—Physical Geography: Gold Medal, D. Bowie, of Dulwich College; Silver Medal, A. L. Humphries, of Liverpool College. Political Geography: Gold Medal, F. J. Naylor, of Dulwich College: Silver Medal, Theodore Brooks, of London International College. It was announced that the subject for the examination in 1881 both in physical and political geography would be Polynesia, including New Zealand.—The following gentlemen were elected as Council and Officers for 1880-81: President, Right Hon. Lord Aberdare; Vice-Presidents, Sir R. Alcock, Major-General Sir H. C. Rawlinson, Sir H. Barkly, Sir B. H. Ellis, Capt. F. J. O. Evans, and F. Galton; Treasurer, R. T. Cocks; Trustees, Lord Houghton and Sir J. Lubbock, Bart.; Secretaries, C. R. Markham and R. H. Major; Foreign Secretary, Lord Arthur Russell; Council, J. Ball, Sir T. F. Buxton, Bart., R. N. Cust, J. Fergusson, Sir T. D. Forsyth, D. W. Freshfield, Col. H. H. Godwin-Austen, J. K. Laughton, Lieut.-Gen. Sir J. H. Lefroy, Sir W. L. Merewether, Admiral Sir A. Milne, Bart., Capt. Sir G. S. Nares, Admiral Sir E. Ommanney, Col. Sir L. Pelly, Lord Reay, Major-General C. P. Rigby, Sir W. Silver, General R. Strachey, Sir R. Temple, Bart., Major-Gen. Sir H. L. Thuillier, and Sir H. C. Verney, Bart.

GEOLOGICAL SOCIETY.

May 26.—R. Etheridge, Esq., President in the chair.—Prof. F. Guthrie, Dr. R. Hænsler, Messrs. J. Hulme, W. Jolly, C. Myhill, and A. G. Savile, were elected Fellows.—The following communications were read: On "The Pre-Carboniferous Rocks of Charnwood Forest," Part III., conclusion, by the Rev. E. Hill and Prof. T. G. Bonney; on "The Geological Age of Central and West Cornwall," by Mr. J. H. Collins; and on "A Second Pre-Cambrian Group in the Malvern Hills," by Mr. C. Callaway.

SOCIETY OF ANTIQUARIES.

May 27.—E. Freshfield, Esq., V.P., in the chair.—Lieut.-Col. G. Francis exhibited two spearheads and a mediæval lock from Oystermouth Castle.—The Rev. G. S. Streatfeild exhibited some fragments of Roman pottery and other remains, which had been found recently at Worlaby, near Louth, in Lincolnshire. Mr. Streatfeild also exhibited a bronze leaf-shaped sword, which had been found on the same spot fourteen years ago.—Mr. Freshfield, by permission of the Rev. Dr. Ridding, head master of Winchester College, exhibited what appeared to be a *martel de fer*, recently found on the site of the old palace of Wolvesey in the course of some excavations undertaken for the purpose of converting the building to the purposes of the college. Of this very curious implement Mr. F. J. Baigent exhibited and presented (through Mr. Freshfield) five distinct views drawn by himself. Mr. Baigent also communicated some remarks descriptive of the *martel de fer*, which were supplemented by a short paper on the same subject from Mr. C. K. Watson, who observed that the Wolvesey example differed from all those of which he had seen representations in the circumstance that while one end was pointed, like other examples, the other had the shape of a sort of cleft or bifurcate adze, which, so far as he could discover, was a unique type.—Capt. Dillon observed that the presence of the guard near the handle left no room for doubt that it was an implement of war. In this example, as in some others referred to by the secretary, there was a sort of hook near the head to attach it to the saddle bow.—Mr. C. K. Watson exhibited some armour which had been brought from the centre of Africa by Col. Gordon. It was fully described by Mr. J. Latham. It consisted (1) of two peaked German or Spanish morions of the seventeenth century, with Oriental mail attached to their quilted neck-pieces; (2) two shirts of body mail, probably Persian, and of the kind known as *grain d'orge*, rivetted together in the Persian fashion; (3) two armlets of a very common kind of steel, with ornamental work hammered into a crossed hatched surface, being "onlaid" as distinguished from "inlaid" work, and resembling the "Kuftgori" work of Northern India; these Mr. Latham believed to be Oriental, but Col. G. Weston expressed it as his opinion that they were native (African) imitations of Oriental work; (4) a steel shield, thirteen inches in diameter, gilt, with four raised bosses, and a crescent in relief, the rim covered with inscriptions in Persian characters; date, eighteenth century. The dome of the shield was covered with figures in relief of birds and animals surrounding arabesque panels, representing the Shah with female figures, cups, narghilies, and dishes. The chief interest of these objects might be described in Pope's lines to Arbuthnot:—

> "These things we know are neither rich nor rare,
> We wonder how the devil they got there."

As an illustration of a somewhat similar puzzle, Mr. Latham exhibited a Spanish morion of the sixteenth century, a coat of brass mail, and an indigenous wooden shield, which had come from Borneo.—Mr. A. W. Franks exhibited a curious gold signet ring of Phahaspes, King of Persepolis, *circa* B.C. 350, together with four other rings in illustration of it. In addition to his own remarks, Mr. Franks communicated some notes on the ring of Phahaspes by Mr. P. Gardner, of the British Museum, showing how the coins of Persepolis had enabled him to determine the attribution of the ring.—Mr. J. H. Parker communicated a paper on the early history of the city of Ardea.

June 3.—E. Freshfield, Esq., V.P., in the chair.—The Dean of Norwich and the Rev. J. Hodgson were admitted Fellows.—This being an evening appointed for the ballot, no papers were read. The following gentlemen were elected: Messrs. W. J. Cripps, L. Samson, F. Seebohm, and C. F. Keary. The Earl of Ashburnham was also proposed and elected under the provisions of the Statutes, ch. i. s. 6.

July 17.—H. Reeve, Esq., V.P., in the chair.—Mrs. Branson exhibited and presented some ancient paintings on panel, in six pieces, which were discovered about 1813 by A. J. Kempe, at Baston House, Keston, Kent. Soon after their discovery they were drawn by Stothard, who said "they were the earliest specimens in oil" he had seen in this country. These drawings Mr. Kempe exhibited to the Society on March 4th, 1830, and on the 1st of April of the same year the panels themselves were shown. They are described and figured in the *Gentleman's Magazine* for December following. At that time they belonged to S. N. Ward, of Baston House, from whom they descended successively to a son, the Rev. H. Ward, Rector of St. Peter's, Aldwinkle, and to a daughter, Mrs. E. Branson, who now presented them through her brother's executor, the Rev. Canon Jackson. These paintings appear to be the remains of a series of kings ranged along the wall of a large apartment. One of the panels bears the name of Athelstan.—Major C. Cooper exhibited the remains of a British urn found at Toddington, and a small fragment of a brass—probably of the De Peyvre family—formerly in Toddington Church, of the time of Richard III.—The Rev. A. Pownall exhibited a small bronze celt found at Naseby Wolleys.—Mr. V. E. Knocker exhibited rubbings of two bells at Goring Church, Oxon. One of them was inscribed, "Sancte Blase;" the other, "Orate Pro Petro Exoniense Episcopo. Ricard De Wambis Me Fist." It does not appear why Peter Quivil, or Wyville (consecrated November 10th, 1280), was commemorated at Goring. Richard Wambish, or Wimbish, was one of a well-known family of bell-founders. In 1312 he cast a bell for the church of the Holy Trinity in Aldgate.—The Rev. J. M. Mello communicated an account of a small find of flint implements in a new locality, viz., in the North Frith woods, near Tunbridge.—Mr. J. F. Nicholls laid before the Society an account of the discovery of a large hoard of coins of the Lower Empire near Bristol, which had been discovered by a boy throwing a stone at a potsherd on the opposite side of a brook near Fillon. The pottery was smashed, and out came an avalanche of coins. The boy is believed to have collected upwards of three thousand pieces. Of those which Mr. Nicholls had seen none was earlier than Licinius or later than Constans I. Those of Constantine the Great were far more numerous.—Mr. R. C. Nichols read a paper on the correction of a numeral in a note to a manuscript of the Anglo-Saxon Chronicle (MS. Laud, 636), quoted by Dr. Oppert in his paper on "The Origin of the Dionysian Æra" (*Archæologia*, xliv., p. 347). Mr. Nichols showed that to make any sense of this passage we must read dxxxi. for xxx.—Mr. R. S. Ferguson communicated a report on the archæology of Cumberland and Westmoreland, and especially on some interesting discoveries of Roman remains at Maryport.—Mr. E. Peacock gave an account of Scotton Church and of its effigies, early glass, and other remains.—The Cumberland and Westmoreland Antiquarian Society presented a cast of what appeared to be a Runic inscription, recently found at Brough, Westmoreland.

THE INVENTORS' INSTITUTE

ESTABLISHED 1st MAY, 1862.

FORTNIGHTLY MEETINGS, DURING SESSION,

HELD (NOVEMBER TO MAY INCLUSIVE) AT

4, ST. MARTIN'S PLACE, TRAFALGAR SQUARE, W.C.

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To Register Designs. To Register Trade Marks.
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To aid in Selling and Licensing Patented Inventions.
To furnish advice and professional Assistance in developing Inventions.
To collect Evidence, arrange Arbitrations, and otherwise assist Inventors in maintaining their rights.

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